Overview

Methicillin/oxacillin-resistant Staphylococcus aureus (MRSA) is a disease long recognized in healthcare settings and now commanding attention outside of the healthcare environment. This article will discuss key information from the Centers for Disease Control and Prevention (CDC) and other resources for the prevention and control of MRSA in non-healthcare environments.

What are Multi-Drug Resistant Organisms (MDRO)?

MDROs include bacteria and microorganisms that are resistant to many antibiotics. There are several types of organisms including:

1. MRSA–Methicillin/oxacillin-resistant Staphylococcus aureus
2. VRE-Vancomycin-resistant enterococci
3. ESBLS-Extended-spectrum beta-lactamases (which are resistant to cephalosporins and monobactams) (drugs such as Keflex, Cefzil, Ancef, and Aztreoman)
4. PRSP-Penicillin-resistant Streptococcus pneumoniae
5. Multi-drug resistant Tuberculosis[1]

MRSA is the most common organism encountered in settings where individuals are housed together for long periods of time. At-risk populations include mental health facilities, adult and juvenile correctional centers, rehabilitation centers, long term care facilities, military barracks, school dormitories, and daycare centers.

MRSA is a "staph infection" that is harder to treat because it is resistant to most common antibiotics. "Staph infections or mild cases of MRSA can look like a pimple or boil and can be red, swollen, painful, or have pus or other drainage."[2] "More serious infections may result in pneumonia, bloodstream infections, or surgical wound infections.''[3]

Colonization vs. Infection

An affected person may be classified as either colonized or infected. Colonization means that the organism that causes MRSA is present in or on the body but is not causing the illness.[4] The Center for Disease Control (CDC) estimates that approximately 25-30 percent of the population is colonized. The organisms are usually carried on the skin or in the nose. These individuals may be a carrier and spread the organism to others who could become infected because of a compromised immune system. Individuals that become infected have the organism present and actually causing illness.

Transmission

MRSA infections can affect anyone and occur anywhere. Some conditions may make transmission easier. The CDC refers to them as the "5C's:"[5]

- **"C**rowding

- Frequent skin-to-skin **C**ontact
- **C**ompromised skin (cuts or abrasions)
- **C**ontaminated items and surfaces
- Lack of **C**leanliness."[6]

If one or more of these factors are present, the likelihood of a potential exposure or outbreak is possible.

Prevention and Control

MRSA is spread through poor hygiene practices such as poor hand washing practices, uncontrolled wound drainage, or contact with contaminated surfaces. Using standard precautions or contact precautions can help control the spread of MSRA in most instances.

"Standard precautions apply to blood; all body fluids, secretions, and excretions, except sweat, regardless of whether or not they contain visible blood; non-intact skin; and mucous membranes. Standard precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals. It includes the use of hand washing, appropriate personal protective equipment such as gloves, gowns, masks, whenever touching or exposure to patients' body fluids are anticipated."[7]

Additional precautions maybe necessary when someone is known or suspected to be infected or colonized by any organism that could potentially be transmitted to another person. Contact precautions are used to prevent the spread of infection by skin-to-skin contact or surfaces potentially contaminated with the microgranisms.[8] Learn more about the principles and practices of MRSA precautions.

The following general prevention techniques can be used to help control the spread of MRSA:

- Wash hands routinely and thoroughly with soap and water or use alcohol-based hand sanitizer.
- Keep all wounds, abrasions, and cuts covered with a clean, dry bandage until healed.
- Avoid sharing personal items such as uniforms, personal protective, equipment, clothing, towels, washcloths, or razors.[9]
- Follow good housekeeping practices in the workplace.
- Ensure that contaminated equipment and surfaces are cleaned with detergent-based cleaners. [10]

Prevention techniques for those infected with MRSA include:

- Keep wounds that are draining or have pus covered with a clean, dry bandage. Pus from infected wound can contain staph and MRSA, so keeping the infection covered will help prevent the spread to others. Bandages or tape can be discarded with the regular trash.[11]

- Wash hands frequently with soap and warm water after changing the bandage, touching an infected wound, or coming into contact with contaminated surfaces.
- Clean and disinfect surfaces that are likely to be contaminated with organisms (at least daily), with a focus on frequently-touched surfaces (i.e. bed rails, over bed tables, door knobs, surfaces in and surrounding toilets, horizontal surfaces in the waiting rooms) and equipment in the immediate vicinity of the customers/clients.

Prevention techniques for workers:

- Wash contaminated clothing separate from other laundry in warm to hot water with laundry detergent.
- Dry clothes in a hot dryer, rather than air-drying; the heat helps kill bacteria.
- Dry clothes completely.
- Clean contaminated equipment and surfaces with detergent-based cleaners.[12]

Implementing the above prevention techniques and using good hygiene practices will greatly reduce the likelihood of a transmission or exposure.

MRSA skin infections are becoming more prevalent outside of the healthcare environment, but are treatable if recognized early and appropriate precautions taken. Implementing and educating staff, clients/customers, and visitors on prevention techniques is the key.

[1] Occupational Safety and Health Administration. (n.d.). Hospital e-Tool-HealthCare Wide Hazards Module. MRO-Multi-Resistant Organisms. Retrieved December 12, 2007 from, http://www.osha.gov/SLTC/etools/hospital/hazards/mro/mro.html.

[2] National Institute of Occupational Safety and Health. (n.d.). MRSA and the Workplace. Retrieved November 28, 2007, from http://www.cdc.gov/niosh/topics/mrsa/.

[3] Ibid

[4] Occupational Safety and Health Administration. (n.d.). Hospital e-Tool-HealthCare Wide Hazards Module. MRO-Multi-Resistant Organisms. Retrieved December 12, 2007 from, http://www.osha.gov/SLTC/etools/hospital/hazards/mro/mro.html.

[5] National Institute of Occupational Safety and Health. (n.d.). MRSA and the Workplace. Retrieved November 28, 2007, from http://www.cdc.gov/niosh/topics/mrsa/.

[6] Ibid

[7] Occupational Safety and Health Administration. (n.d.). Hospital e-Tool-HealthCare Wide Hazards Module. (Lack of) Universal Precautions. Retrieved December 14, 2007 from, http://www.osha.gov/SLTC/etools/hospital/hazards/univprec/univ.html.

[8] Ibid

[9] National Institute of Occupational Safety and Health. (n.d.). MRSA and the Workplace. Retrieved November 28, 2007, from http://www.cdc.gov/niosh/topics/mrsa/.

[10] Ibid

[11] Ibid

[12] Ibid

[13] Commonwealth of Virginia Workers' Compensation Program. (n.d.). EMPLOYER INFORMATION MRSA (Methicillin-Resistant *Staphylococcus aureus*) AND THE WORKERS' COMPENSATION PROCESS. Retrieved November 28, 2007 from, http://www.dhrm.virginia.gov/mrsa/MRSAInformationforWCClaims.pdf.

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